

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of controlling an exhaust filter regeneration regime ~~in which~~ comprising:

injecting fuel is injected into an exhaust stream ~~to increase~~ and thereby increasing an exhaust stream temperature, said increasing exhaust stream temperature being in conjunction with a catalytic treatment element~~[[,]]; and~~

~~the method comprising the step of~~ metering fuel injection dependent upon the exhaust stream temperature.

2. (Currently Amended) A method as claimed ~~as in~~ claim 1 in which the fuel ~~injection~~ injecting is metered by controlling one of ~~the~~ fuel injection rate, fuel injection pulse duration, amount of fuel injected, fuel injection pressure variation, and injected fuel type variation.

3. (Currently Amended) A method as claimed in claim 1 ~~or claim 2~~ in which the exhaust stream temperature comprises the temperature of the exhaust stream at ~~the~~ an outlet of the catalytic treatment element.

4. (Currently Amended) A method as claimed in claim 3 in which fuel injection is further metered dependent upon the temperature of exhaust gas exiting ~~the~~ an engine and the temperature at ~~the~~ an inlet of the catalytic treatment element.

5. (Currently Amended) A method as claimed in ~~any preceding~~ claim 1 comprising initiating fuel injection into the exhaust stream when ~~the~~ a filter load exceeds an initiation value.

6. (Currently Amended) A method as claimed in ~~any preceding~~ claim 1 in which fuel injection is terminated upon any of: a filter load reducing to a predetermined determination threshold, a catalytic treatment element temperature reducing below or exceeding a termination threshold or a regeneration regime period exceeding a time threshold.

7. (Currently Amended) A method as claimed in ~~any preceding~~ claim 1 further comprising recording a regeneration regime history and modifying the regeneration regime based on the recorded history.

8. (Currently Amended) A method as claimed in ~~any preceding~~ claim 1 further comprising the step of pre-heating fuel to be injected with vehicle waste heat ~~fuel to be injected~~.

9. (Currently Amended) A method as claimed in ~~any preceding~~ claim 1 in which fuel is mixed with compressed air in an injection head prior to injection into an exhaust stream.

10. (Currently Amended) A method as claimed in claim 9 in which a supply of fuel to the injection head is terminated a predetermined ~~instant~~ time prior to a termination of a compressed air supply.

11. (Currently Amended) A method of triggering an exhaust filter regeneration regime comprising obtaining a value of filter load as function of a filter pressure and an exhaust mass flow and triggering a regeneration regime when the filter load exceeds a predetermined value.

12. (Currently Amended) A method as claimed in claim 11 comprising the step of initiating fuel injection into ~~the~~ an exhaust stream upon the triggering the exhaust filter regeneration regime.

13. (Currently Amended) A method of triggering an exhaust filter regeneration regime comprising monitoring filter pressure peak values, identifying when a filter load exceeds a predetermined value from the monitored filter pressure peak values and triggering a regeneration regime.

14. (Original) A method of triggering an exhaust filter regeneration regime in which fuel is injected into an exhaust stream to increase exhaust stream temperature in conjunction with a catalytic treatment element comprising obtaining a value of catalytic treatment element temperature and triggering the regeneration regime when the obtained temperature exceeds a predetermined value.

15. (Currently Amended) A method as claimed in claim 14 further comprising obtaining a value of ~~the~~ a filter load as a function of ~~the~~ a filter pressure and an exhaust mass flow and triggering the regeneration regime when the filter load exceeds a predetermined value.

16. (Currently Amended) A method of controlling an exhaust filter regeneration regime comprising implementing an exhaust stream temperature control strategy, monitoring variation in exhaust stream temperature and at least one control parameter, obtaining a ~~correlation~~ correlation between variation in exhaust stream temperature and the control parameter and adjusting the temperature control strategy based on the correlation obtained.

17. (Currently Amended) An exhaust filter regeneration apparatus comprising a fuel injector arranged to be mounted in an exhaust stream conduit and a controller for controlling the fuel injector, said fuel injector and said controller being configured to implement a method as claimed in any preceding claim an exhaust filter regeneration regime comprising injecting fuel into an exhaust stream and thereby increasing an exhaust stream temperature, said increasing exhaust stream temperature being in conjunction with a catalytic treatment element; and metering fuel injection dependent upon the exhaust stream temperature.

18. (Original) An exhaust filter regeneration apparatus comprising an exhaust stream conduit and a fuel injector mounted therein and arranged to inject fuel in an exhaust stream direction.

19. (Currently Amended) An exhaust filter regeneration apparatus as claimed in claim 18 in which the fuel injector includes a fuel input channel and an air input channel, each said channel having an output end, whereby the output ends of the air and fuel channels are provided adjacent one another at a fuel injection output.

20. (Original) An exhaust filter regeneration apparatus as claimed in claim 19 in which the fuel input channel is connected to a fuel pump and the air input channel is connected to a compressor.

21. (Original) An exhaust filter regeneration apparatus as claimed in claim 20 in which said fuel pump is a peristaltic pump.

22. (Original) An exhaust filter regeneration apparatus as claimed in claim 20 whereby said compressor is arranged to operate in the pressure range of 2 to 200 bar.

23. (Currently Amended) An exhaust filter regeneration apparatus as claimed in ~~any~~ claim 17 to 22 having an electrical heater located ~~before~~ upstream of an exhaust gas input face of the catalytic treatment element relative to an exhaust steam flow.

24. (Original) An exhaust filter regeneration apparatus as claimed in claim 23 where said electric heater is formed of a catalytic treatment element.

25. (Currently Amended) An exhaust filter regeneration apparatus as claimed in ~~any~~ claim 17 in which the fuel injector draws fuel directly from ~~the~~ a vehicle fuel tank or fuel line.

26. (Currently Amended) An exhaust filter regeneration apparatus as claimed in ~~any of claims~~claim 17 to 25 further comprising an exhaust filter component and a sensor extending radially therein.

27. (Currently Amended) An exhaust filter regeneration apparatus as claimed in ~~any of claims~~claim 17 to 26 further comprising a fuel conduit ~~for providing~~ configured to provide fuel to the fuel injector in which the fuel conduit is preheated by ~~any~~ waste heat.

28. (Currently Amended) An engine ~~or vehicle~~ including an apparatus as claimed in ~~any of claims~~claim 17 to 27.

29. (Currently Amended) A computer program[[me]] comprising a set of instructions configured to implement ~~the method as claimed in any of claims 1 to 16~~ an exhaust filter regeneration regime comprising injecting fuel into an exhaust stream and thereby increasing an exhaust stream temperature, said increasing exhaust stream temperature being in conjunction with a catalytic treatment element; and metering fuel injection dependent upon the exhaust stream temperature.

30. (Currently Amended) A computer arranged to operate under the instructions of the computer program[[me]] as claimed in claim 29.

31. (Currently Amended) An engine control unit configured to implement ~~a method as claimed in any of claims 1 to 16~~ an exhaust filter regeneration regime comprising injecting fuel into an exhaust stream and thereby increasing an exhaust stream temperature, said

increasing exhaust stream temperature being in conjunction with a catalytic treatment element;
and metering fuel injection dependent upon the exhaust stream temperature.

32. (Currently Amended) A computer readable medium storing a set of instructions to implement ~~a method as claimed in any of claims 1 to 16~~ an exhaust filter regeneration regime comprising injecting fuel into an exhaust stream and thereby increasing an exhaust stream temperature, said increasing exhaust stream temperature being in conjunction with a catalytic treatment element; and metering fuel injection dependent upon the exhaust stream temperature.

33. (Currently Amended) A method ~~or apparatus substantially as described herein with reference to the drawings~~ of controlling exhaust, comprising:

increasing an exhaust stream temperature;

controlling said increasing an exhaust stream temperature in conjunction with a catalytic treatment element; and

metering fuel injection dependent upon said exhaust stream temperature.

34. (New) An apparatus for controlling exhaust, comprising:

means for increasing an exhaust stream temperature;

means for controlling said increasing an exhaust stream temperature in conjunction with a catalytic treatment element; and

means for metering fuel injection dependent upon said exhaust stream temperature.